Acquisition at the Air Armament Center

AGMSW

July Precision Strike Conference 2005

Air-to-Ground Munitions Systems Group
Mr. Thomas Robillard, SES
Director

Why Are We Here?

Communicate What's Going On With Precision Strike From An Air-to- Ground Munitions Systems Wing Perspective

Learn From Each Other

Desired Outcome

Benefit From Cross-Talk

Get More Effective At Joint Service Technology Transitions

Air Armament Center (AAC)

AGMSW

- Provides Weapons And Combat Support Systems To AF, Navy, Army, And More Than 30 Countries
- Air Armament Modernization Budget Is Consistently 2-3% Of Total AF Budget ~$300m Per Year (06 POM)
- Laboratory, Acquisition Offices, Developmental And Operational Test Organizations Are Co-Located At The AAC

AFMC / AAC MISSION

Deliver War-winning Technology, Acquisition Support, Sustainment, And Expeditionary Capabilities To The Warfighter

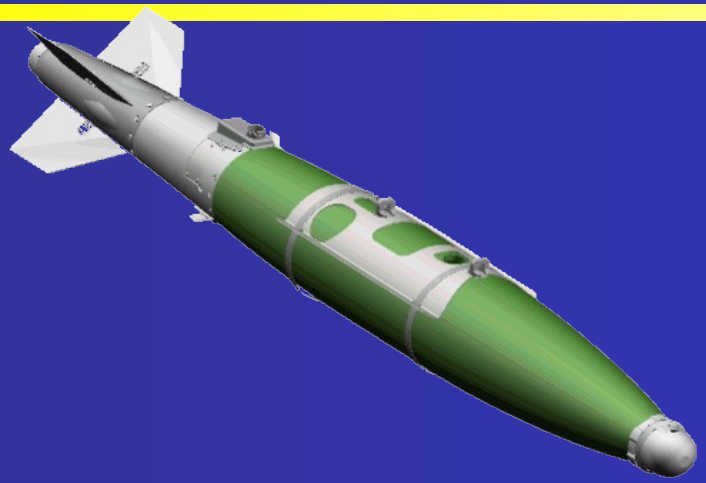
AFMC /AAC Strategic Goals

AGMSW

- Develop And Transition Technology To Maintain Air, Space, And Information Dominance
- Develop, Field, And Sustain War-winning Expeditionary Capabilities On Time, On Cost
- Provide Opportunities For Career Development And Progression
- Operate Quality Installations And Ranges
- Sustain A Healthy, Fit, Safe, And Ready Workface
- Organize And Resource The Command To Improve Accountability And Increase Effectiveness
- Achieve Agile Acquisition Through Speed And Credibility

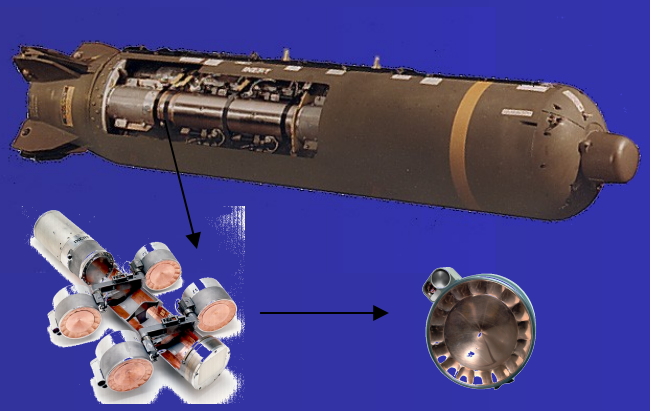
Air-to-Ground Munitions Systems Win (AGMSW)

AGMSW



Joint Direct Attack Munition (JDAM)

Joint Air Surface Standoff Missile (JASSM)



Sensor Fuzed Weapon (SFW)

Small Diameter Bomb (SDB)

Air-to-Air Missile System Wing (AAMSW)

AGMSW

Harm Targeting System (HTS)

Advanced Medium-Range, Air-to-Air Missile (AMRAA

QF-4 Full Scale Target

Sidewinder AIM –9X

Miniature Air Launched Decoy (MALD)

Air Force Sub-Scale Aerial Target (AFSAT)

Technology Transition
The DoD 5000 Process

AGMSW

Program Initiation

A or B C IOC FOC

Requirement Generation	oncept efinement	Technology Development	System Development & Demo	Production & Deployment	Operations & Support

S&T Activity
6.1, 6.2, 6.3

Technology Readiness Level ≥ 6

Top-Down Direction
- SecDef
- SecAF
- CSAF

Combatant Commander Needs
- Integrated Priority List (IPL)
- Urgent Need Requests

REQUIREMENTS

Technology Transition
- ATDs
- ACTDs
- Exercises
- Experiments
- Battlelab Initiatives
- SPO Initiatives
- Industry

Capability Based Planning
- CONOPS
- CRRA

Who Does Technology Transition & Program Starts?

AGMSW

Pre-Systems Acquisition

- AF Research Laboratory/Munitions Directorate
  - Technology Maturation
  - Integrated Concepts/Demos
  - Expertise
- AAC/XR
  - Initial Program Cadres
  - Quick Reaction Programs
  - Guides S&T Investment

Acquisition Offices

Air-Ground Sys WG
Air-Air Msl Sys WG
Air Combat Sup Sys GP

Sustainment

Air Logistic Centers

Multi-service and International Stakeholders: Industry, Warfighters, Laboratories, Service, OSD Staffs, & Congress

The DoD 5000 Process For New Programs

"Behind the Textbook"

AGMSW

- **Identify Technology That Provides Warfighter Additional Capability**
  - **Better And/Or Cheaper Than Current Inventory**
  - **Fills Capability Gap(s)**
- **Assess Risk And Understand Technology Maturity**
  - **Conduct Risk Reduction, Concept & Technology Development Activities**
  - **Demonstrate Maturity**
- **Develop Focused Story That Articulates Capability In Warfighter Terms**
- **Lab, Industry, Acquisition Community Relay Story To Stakeholders**
- **If Story Is Good, Funding And Direction Will Come**

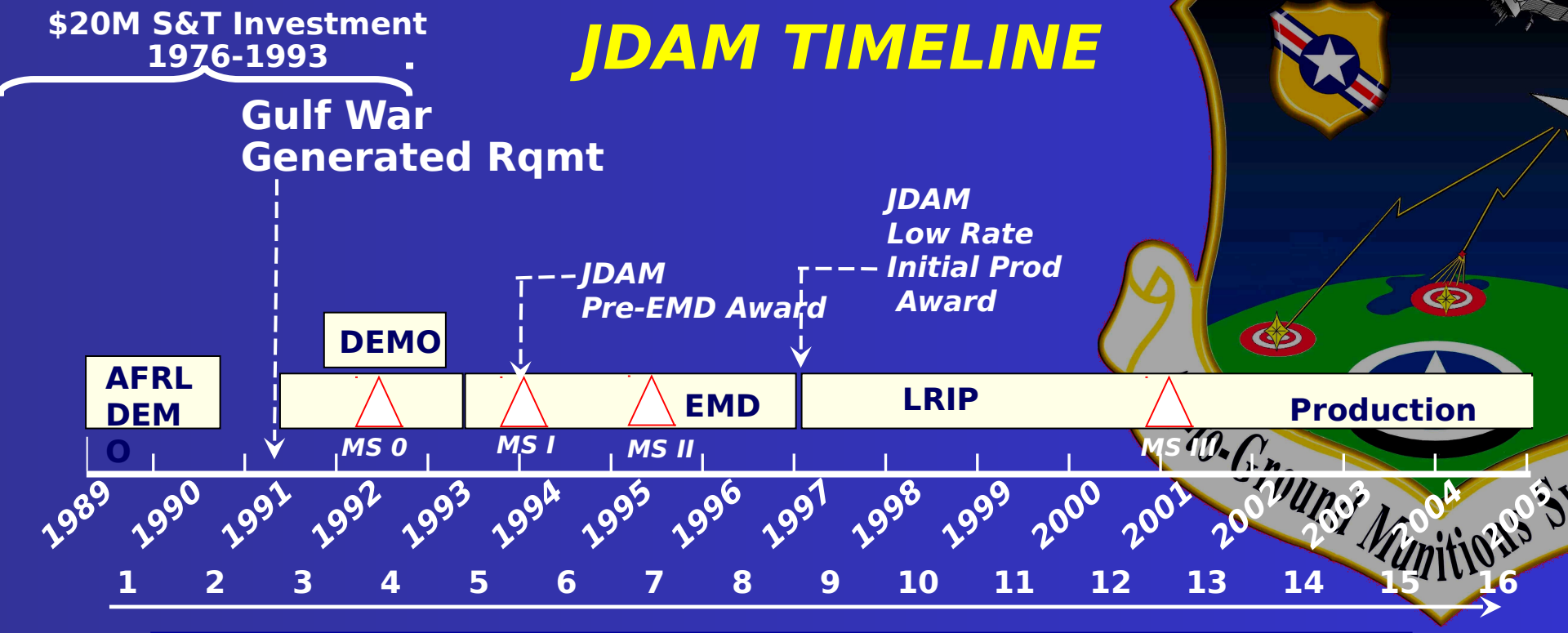
This Process works best when "PULLED" by capability needs and takes 5 years or more

JDAM Story

AGMSW

- AFRL Inertial Guidance Technology Demonstration 1989-1990
- Gulf War – 1991 – Need For Accurate All-Weather Weapons

JDAM TIMELINE



5 Years from Technology Demonstrations,
3 Years From Identified Need to Milestone I

JDAM Start-up

AGMSW

- Competing Concepts
- Technology Maturity Debates
  - GPS Technology Was New For Use In Weapons
  - Inertial Navigation Systems Were Expensive
  - Can You Make It Affordable For Large Quantity, Expendable Weapons?
- Use/Reliability Of Autonomous Weapons
  - Existing Concepts Of Operations Were Based On Data Linked Weapons Or Carpet Bombing
- Funding
  - Had To Marry Up With POM Cycle
  - Had To Sell New Acquisition Strategy – Promised Affordability
    - Cost Vice Performance Trades
    - Performance Specifications
    - Long Term Pricing Agreements

JDAM For OEF and OIF

AGMSW

- **Prior to 11 Sept 01 Attacks**
  - 700 Units Per Month
  - Aircraft

MK 82 (500 lb)	MK 83 (1000 lb)	MK 84 (2000 lb)	
None	F/A-18 C/D	F-16 Blk 50	F-14
		F/A-18 C/D	B-2
		B-52	B-1

- **Today**
  - 2800 Units Per Month
  - More Aircraft Integrations - Smaller Bombs

MK 82 (500 lb)		MK 83 (1000 lb)	MK 84 (2000 lb)	
B-2	F-15E*	F/A-18 C/D	F-16 Blk 50	F-14
F-16 Blk 30*	F/A-18 C/D	F/A-18 E/F	F/A-18 C/D	B-2
F-16 Blk 40*	MQ-9* (FY06)	AV-8B	F/A-18 E/F	B-1
F-16 Blk 50*	B-1 (FY06)	F-22 (FY-06)		B-52

* Quick Reaction Capability

Precision + Low Collateral Damage + Platform Flexibility in Months Vice Years

JDAM Today

AGMSW

- Accuracy: Less Than 6 Meters
- Cost: Less than 50% Original Estimated Unit Cost
- Number Produced To Date: 104,320
- Number Used In Conflict: 15,180

  (AF: 11,570, Navy: 3,610)

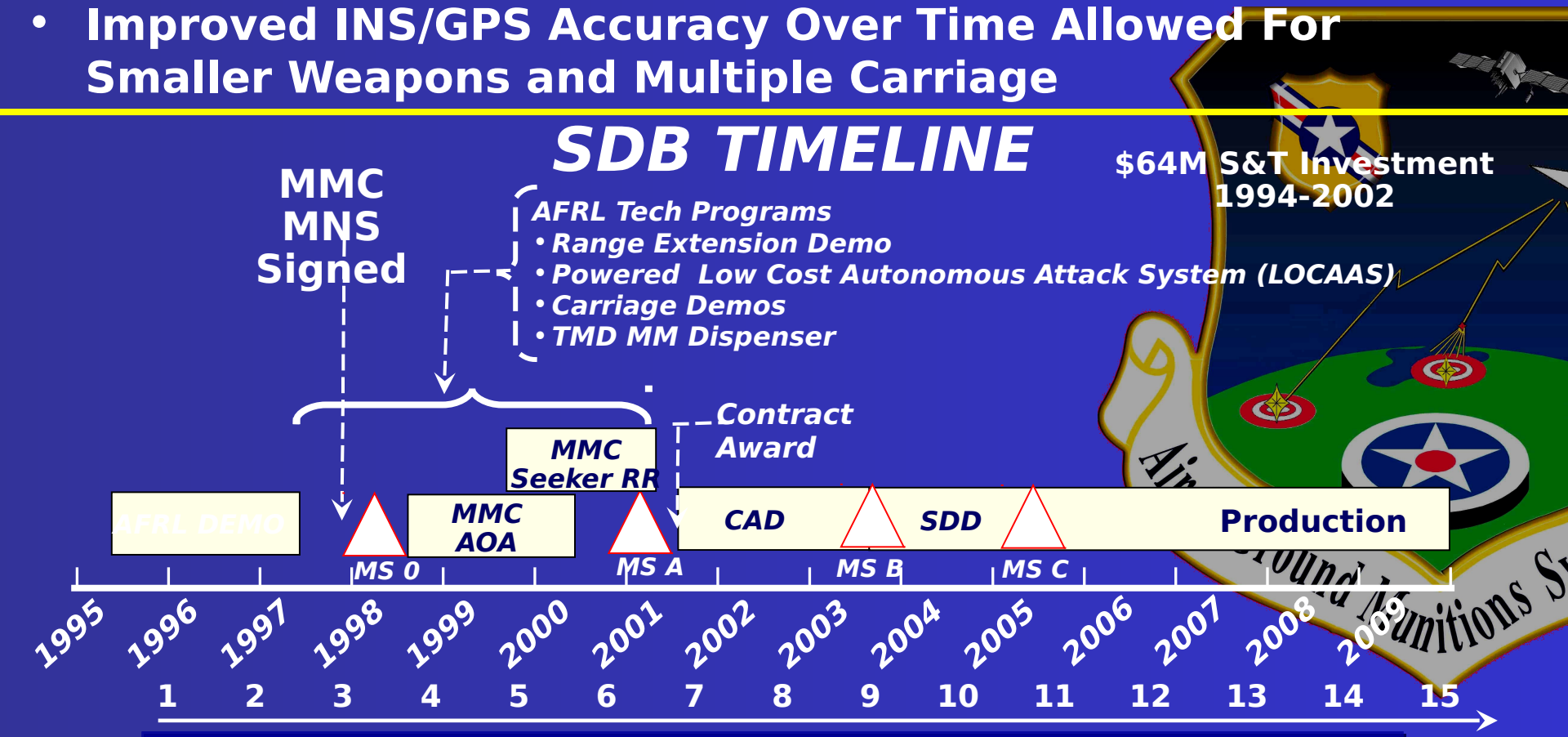
Small Diameter Bomb (SDB)

SDB Story

AGMSW

- Aircraft Internal Bays Limit Number Of Weapons Carried
- Increased Need For Near-zero Collateral Damage
- Improved INS/GPS Accuracy Over Time Allowed For Smaller Weapons and Multiple Carriage

SDB TIMELINE


MMC MNS Signed
AFRL Tech Programs
• Range Extension Demo
• Powered Low Cost Autonomous Attack System (LOCAAS)
• Carriage Demos
• TMD MM Dispenser
$64M S&T Investment 1994-2002
Contract Award
MMC Seeker RR
AFRL DEMO
MMC AOA
CAD
SDD
Production
MS 0
MS A
MS B
MS C
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

6 Years From Technology Demonstration,
3.5 Years From Identified Need to Milestone A

SDB Start-up

AGMSW

- **Challenges**
  - Belief That Nothing Smaller Than 2,000 lbs Could Sufficiently Damage Targets
  - Bomb Damage Assessment – How Will We Know What Damage Was Incurred With Small Amount Of Explosive?
  - Worry That We Couldn't Mission Plan That Many Weapons
  - Funding – 4 Years "Below-the-line" In POM

- **What Happened:**
  - Lab, Industry, Acquisition And Warfighter Communities Collaboratively Built And Told The SDB Story
    - Lab Demo, Live Fire, B-2 With 80 500 lb JDAMS, …
  - Top-down Directed Funding For Program In FY01 & Out
    - 04 POM Fully Funded Baseline Program

Lessons Learned

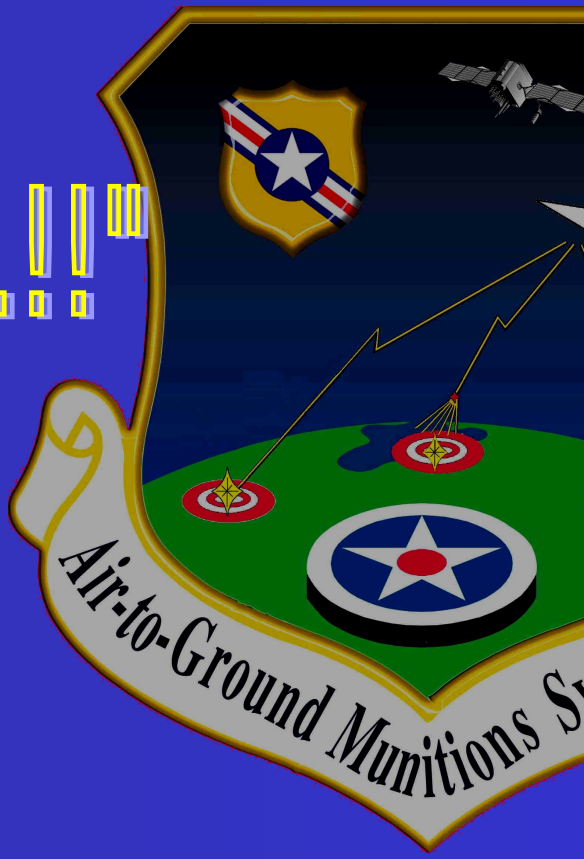
AGMSW

- Capabilities Needed In Actual Combat Drive Technology Transitions
  - Create Battlefield Effects With Near-zero Collateral Damage
  - Integrate Seamlessly Into Fully Joint Warfighting
- Multitude Of Diverse Stakeholders Must Converge To Successfully Transition Technology
  - Industry, Warfighters, Service & OSD Staffs, Congress
- Aircraft Integration Is The Slowest, Most Costly Driver
  - 5-8 Platforms (F-18 E/F, FA-22, JSF, B-2, B-52, F-15, F-16, B-1, UAVs)

Joint Programs

AGMSW

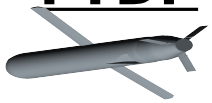
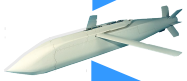
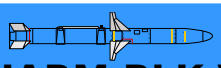
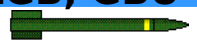
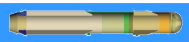
"Now More Than Ever.....!!"



AAC/XR Roadmap Vision

	TODAY	FYDP	2012	2020
HDBT/UGF	GBU-31 (BLU-109) GBU-28 (BLU-113)	GBU-28C/B (BLU-122) JASSM/JASSM-ER	MOP / CAV	Hyper CM RNEP
Fixed Land	LGBs, JDAMs, PSOW, A ve	JASSM/JASSM-ER SDB & SDB II	LCMCM, CAV, Area Dominator	DE & HPM Weapons
Fixed Urban	GBU-12 B/B, Hellfire	SDB, SDB II & JCM Low Collateral Damage Wi	Area Dominator & VSM	DE & HPI Microbot
Moving Land	CBU-103/104/105s, LGBs, Longbow, & Mavericks	SDB II, JCM, & CBU-105 ER w/DL	LCMCM, WASAAMM, Area Dominator	DE & HPM Global Energ Projection
Moving Sea	LGB & Maverick	SDB II, JCM, JASSM & CBU-105	LCMCM, WASAAMM Area Dominator	DE Weapon ASSM (HSW

N78 1Q 2004 (POM 06)

	TODAY	FYDP	2012	2020
LR Standoff	SLAM ER	 SLAM ER TLAM Blk III / TACTOM	SLAM ER TLAM Blk III / TACTOM	TACTOM (HSW)
	JSOW "A"	JSOW "A" and "C"		JSOW AARGM
MR Standoff	 HARM BLK V	HARM BLK V and AARGM	JSOW AARGM SDB II	SDB II
Direct Attack	Maverick JDAM LGB, GBU-24  2.75"/5.00" ROCKET, GP Bombs	Maverick JDAM 82, 83, 84 GBU 24, LGB APKWS, GP Bombs	JDAM LGB JCM, APKWS GP Bombs 	JDAM JCM, APKWS GP Bombs
DA Moving/ MobileTarget	GP Bombs, LGB TOW / HELLFIRE	 JCM HELLFIRE	JCM SDB II	JCM SDB II

A Lesson From Air-to-Air

AGMSW

- Joint Air Dominance Organization (JADO)
  - Air-to-Air Focus
  - USAF/ USN Focus
  - In Start-up Mode
- Need to Incorporate Precision Strike
  - Air-to-Air/ Air-to-Ground Framework
  - Capability Focus Independent of Service or Launch Platform (SLAMRAAM)

Joint is not a Four Letter Word

Preparing For The Future

AGMSW

- **Small Diameter Bomb**
  - Field More Precise, 250 lb Bomb In FY06
- **Universal Armament Interface**
  - Develop Plug-and-Play Aircraft/Weapon Interfaces
- **Net-Ready Weapons**
  - Establish Interface Standard For Weapon Data Links
    - ACTD FOR SDB, JASSM, JSOW-C, MALD-J
- **Directed Energy Application – Are We Ready?**
  - 8-10 Feb 05 Workshop Focused On Transition
- **Armament Symposium – 4-5 Oct 05**
  - Focus Areas: CBRNE, CAS, Long Range Strike

AIR ARMAMENT
Air-to-Ground Munitions Systems Wing
QUESTIONS
?

Historical Perspective Infusion of Weapon New Starts

AGMSW

FY94 FY95 FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 F

JDAM

WCMD

JASSM

= ACAT I Programs

SDB I

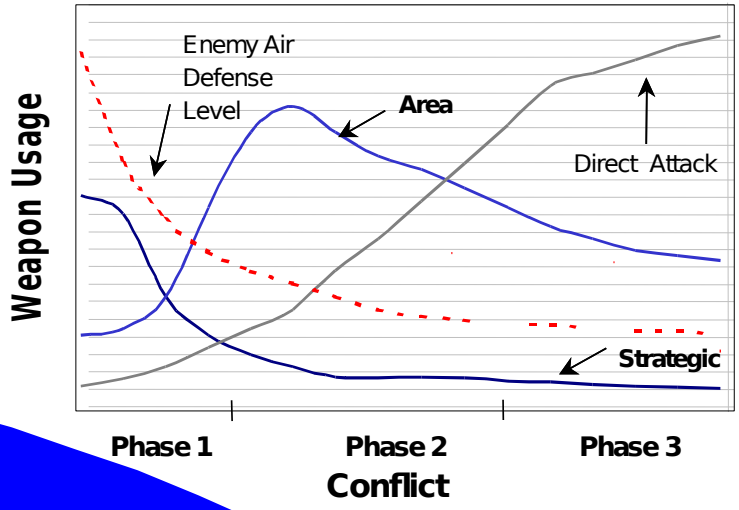
MALD

JASSM-ER

SDB II

Budget Priorities Rule Technology Transitions

Phased Threat Distribution



SLAM-ER
Tomahawk
J ASSM

J SOW
SLAM-ER
GBU-24
TACTOM
ARGM
Harm

J SOW
J DAM
LGB
Hellfire
Guns
Rockets

Phase I — High Value — First day/early — Low quantity — Strategic / Theater

Phase II — Medium Threat — Early / mid — Moderate quantity — Area / Point

Phase III — Low Threat — Mid/duration — Large quantity — Point / Direct